
Analysing the General Elections of India 2014

Shubham Prakash(14683)

Divyat Mahajan(14227)
(AUDITOR)

Shubham Gupta(14674)

1 Objective

In this project, we analysed the General Elections of India 2014 using different voting systems and compared the results to find which voting system turnout be more democratic in nature. In our project, we replaced Indian voting system to address the following problems:

1. Large number of political parties and independent candidates in each state.
2. No inclusion of multiple preferences of voters in current system.

In first part of our project, we analysed the General Elections 2014 by replacing the Indian voting system by preferential voting system. In this part, we simulated the second preference of the voters by studying the sentiments of voters in each state. Finally, we computed the score of each candidate by using (1,0.5) as our scoring vector.

In second part of our project, we applied negative preferential voting system to analyse General Elections 2014. In negative preferential voting system, each voter gives one positive and one negative preference(i.e each voter approves and disapproves one candidate). We applied this model, by simulating the negative preferences of the voters in each state. Finally, we computed the score of each candidate by using (1,-1) as our scoring vector.

In third part of our project, we replaced Indian Electoral system by US electoral system. In this part, we addressed the problem of large number of political parties by assigning all the constituencies of a state to the party which wins in most of the constituencies.

The criteria for a state to have US System is if the total number of distinct political parties winning in constituencies of that state is greater than a certain threshold value. Finally, we observed changes in number of seats of the party securing majority in Lok Sabha and the number of total distinct parties that make to Lok Sabha by changing the value of the threshold.

2 Prior Work

A lot of disussions have been done earlier whether our current Electoral System is good or not. According to the paper "THE ELECTORAL SYSTEM IN INDIA by Dr. M.S. Gill, Chief Election Officer of Lok Sabha Elections in 1997^[1], Indian Election is the largest event in the world in terms of participation and management. He beleives that any other Electoral System with more rounds or more options are likely to be become impossible considering the population and the literacy level of people. He beleive if we add more preferences, people as well as Managements are likely to misjudge between the parties and this might make the whole event biased and incorrect. Thus, the electoral model used currently is the best feasible model.

3 Hypothesis

In order to generate results for different electoral systems, we need to know the 2^{nd} and the negative preference of people. Since, that was not collected in Elections, we tried to extrapolate these by studying the conditions of each and every state. Here is the list of hypothesis assumed by us for the following states:-

3.1 Preferential Voting System

3.1.1 Andaman and Nicobar Islands

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	BJP(25%) & IND(75%)
IND	BJP(25%) & IND(75%)

Andaman Nicobar is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution .

3.1.2 Andhra Pradesh

Political Parties	2nd Preferences
INC	Proportionately between IND and TRS
BJP+TDP	Proportionately between IND and TRS
TRS	Proportionately between INC and TDP
IND	Proportionate distribution according to first preference

In 2014 elections for Andhra Pradesh, BJP and TDP were in collaboration. Thus, we considered them as one. This state was not much affected by Modi Wave with the local party TRS in picture. INC voters will go with TRS or IND since TRS was formed earlier in alliance with INC. On following assumptions, we have this distribution.

3.1.3 Arunachal Pradesh

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	INC(20%) & IND(80%)
IND	BJP(25%) & IND(75%)

Arunachal Pradesh is a state where people elect based on the popularity. A central positive sentiment favoured BJP and difference between INC and BJP candidate is very less in case INC is winning. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.4 Assam

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	BJP(25%) & IND(75%)
IND	BJP(25%) & IND(75%)

Assam is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution .

3.1.5 Bihar

Political Parties	2nd Preferences
INC+RJD	Proportionately between JD(U) and IND
BJP	Proportionately between JD(U) and IND
JD(U)	Proportionately between INC and BJP
IND	Proportionately between (INC + RJD), BJP and JD(U)

In 2014 elections for Bihar, INC and RJD were in collaboration. Thus, we considered them as one. This state was very much affected by Modi Wave with the local leader Sushil Modi representing Modi community. So, people voting for INC or RJD are unlikely to vote for BJP. People voting for JD(U) can have two opinions, first JD(U) is against BJP this time and second JD(U) came in collaboration with BJP for state elections. Thus, chances of different views are possible. On following assumptions, we simulated this distribution.

3.1.6 Chandigarh

Political Parties	2nd Preferences
INC	Proportionately between AAP and IND
BJP	IND(80%) & AAP(20%)
AAP	Proportionately between INC and IND
IND	Proportionate distribution according to first preference

Chandigarh was quite affected by Modi Wave but Kejriwal picture also came in between. Keeping the counter parties preferences in mind, we came on this very conclusion.

3.1.7 Dadra and Nagar Haveli

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

Dadra and Nagar Haveli is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.8 Daman and Diu

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

Daman and Diu is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.9 Delhi

Political Parties	2nd Preferences
INC	Proportionately between AAP and IND
BJP	IND(80%) & AAP(20%)
AAP	Proportionately between INC and IND
IND	Proportionate distribution according to first preference

Delhi was quite affected by Modi Wave but Kejriwal picture also came in between. Both Kejriwal and Modi tried to diminish INC game here. And that's why, INC was never in race. Keeping the counter parties preferences in mind, we came on this very conclusion.

3.1.10 Goa

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

Goa is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.11 Gujarat

Political Parties	2nd Preferences
INC	BJP(40%) & IND(60%)
BJP	INC(10%) & IND(90%)
IND	Proportionate distribution according to first preference

Gujarat is Modi's place and there's no chance that Modi Wave will not work here. Even, people preferring INC or other parties will go for BJP. Accounting this in fact and the State Politics, we came up to this very conclusion.

3.1.12 Haryana

Political Parties	2nd Preferences
INC	Proportionately between IND and INLD
BJP	INLD(100%)
INLD	BJP(100%)
IND	Proportionately between BJP, INLD and INC

Haryana is very much into State Politics. Modi Wave was also prevalent there. Accounting INLD, the famous local party in picture, we came to this conclusion.

3.1.13 Himachal Pradesh

Political Parties	2nd Preferences
INC	BJP(30%) & IND(70%)
BJP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preferences

Studying Himachal's people predictions is tricky. If we see history, BJP and INC always come in alternate terms. This time, Modi Wave did help BJP. Keeping the no counter vote policy in mind, we came up with this prediction.

3.1.14 Jammu and Kashmir

Political Parties	2nd Preferences
INC	Proportionately between JKDPD and IND
BJP	JKDPD(100%)
JKDPD	Proportionately between BJP and IND
IND	Proportionate distribution according to first preferences

In J&K, there was an internal pact between JKDPD and BJP which was revealed later. Since, JKDPD were related to INC earlier, we decided this distribution would be the best estimate.

3.1.15 Jharkhand

Political Parties	2nd Preferences
INC+JMM	Proportionately between JVM and IND
BJP	Proportionately between JVM and IND
JVM	Proportionately between BJP and (INC+JMM)
IND	Proportionately between BJP and (INC+JMM)

Due to wide variety in types of people in Jharkhand, the vote structure differs a lot between Rural and Urban Areas. With local parties like JVM and JMM into picture, the simulation becomes quite complicated. Taking consideration into old and new pacts we came up with this very conclusion.

3.1.16 Karnataka

Political Parties	2nd Preferences
INC	Proportionately between JD(S) and IND
BJP	Proportionately between IND and JD(S)
JD(S)	Proportionately between INC and IND
IND	Proportionately between INC, BJP and JD(S)

Modi Wave was quite prevalent in Karnataka since we saw completely different results as compared to State Assembly Elections which happened just few months back in 2013. JD(S) have links with both BJP and INC, currently favoring INC. Thus the distribution.

3.1.17 Kerala

Political Parties	2nd Preferences
INC	IND(100%)
BJP	Proportionately between CPM and IND
CPM	Proportionately between BJP and IND
IND	Proportionately between CPM, BJP and INC

Local Parties are quite prominent here as INC and BJP did not manage to capture any good results. Since, CPM is in coalition with BJP, we thought this prediction as best one. Thus, the distribution.

3.1.18 Lakshadweep

Political Parties	2nd Preferences
INC	NCP(25%) & IND(75%)
NCP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

No BJP in Lakshadweep. This is a place where people elect based on the popularity. NCP and INC have a good fight here. People favouring NCP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.19 Madhya Pradesh

Political Parties	2nd Preferences
INC	BJP(40%) & IND(60%)
BJP	INC(10%) & IND(90%)
IND	Proportionate distribution according to first preference

In MP, only BJP and INC are prominent and both likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.20 Maharashtra

Political Parties	2nd Preferences
INC+NCP	IND(85%) & BJP+SHS(15%)
BJP+SHS	IND(80%) & INC+NCP(20%)
IND	Proportionately between BJP+SHS and INC+NCP

Here, INC and NCP plus BJP and SHS fought in coalitions. As like in above cases, BJP sentiments helped BJP+SHS and taking account of same counter part there, we assumed this distribution.

3.1.21 Manipur

Political Parties	2nd Preferences
INC	NPF+CPI(25%) & IND(75%)
NPF+CPI	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

No BJP in Manipur. This is a place where people elect based on the popularity. NPF + CPI and INC have a good fight here. People favouring NPF and CPI or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.22 Meghalaya

Political Parties	2nd Preferences
INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If 2nd preference is to be taken into account, this is the only option.

3.1.23 Mizoram

Political Parties	2nd Preferences
INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If 2nd preference is to be taken into account, this is the only option.

3.1.24 Nagaland

INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If 2nd preference is to be taken into account, this is the only option.

3.1.25 Puducherry

Political Parties	2nd Preferences
INC	Proportionately between ADMK and IND
ADMK	Proportionately between INC, AINRC and IND
AINRC	Proportionately between ADMK and IND
IND	Proportionately between INC, ADMK and AINRC

Two local parties rule in Puducherry. INC have good pact with ADMK as ADMK was formed from INC. Taking all this in account, we came up to this very conclusion.

3.1.26 Punjab

Political Parties	2nd Preferences
INC	Proportionately between AAP and IND
BJP+SAD	Proportionately between AAP and IND
AAP	Proportionately between INC and IND
IND	Proportionately between INC, BJP+SAD and AAP

Here, BJP and SAD fought in collaboration. Thus, considering them as one. Both INC and BJP voters will prefer not to vote for counter, and AAP being only good option, voters from each community will vote for AAP. Now, AAP has a collaboration with INC since BJP was there in large scale, we assumed this distribution will be the best.

3.1.27 Rajasthan

Political Parties	2nd Preferences
INC	BJP(40%) & IND(60%)
BJP	INC(10%) & IND(90%)
IND	Proportionate distribution according to first preferences

If we see history of Rajasthan, BJP and INC always come in alternate terms. This time, Modi Wave did help BJP. Keeping the no counter vote policy in mind, We came up with this prediction.

3.1.28 Sikkim

Political Parties	2nd Preferences
SKM	IND(100%)
IND	SKM(100%)

Single Party Dominant State. If 2nd preference is to be taken into account, this is the only option.

3.1.29 Tamil Nadu

Political Parties	2nd Preferences
INC	Proportionate between DMK and IND
DMK	Proportionately between INC and IND
ADMK	Proportionately between DMK and IND
DMDK	Proportionately between ADMK and IND
IND	Proportionately between INC, DMK, ADMK, DMDK and IND

Tamil Nadu don't have BJP in such. Three major state parties DMK, ADMK and DMDK are quite popular throughout the state. DMK have connections with INC while ADMK and DMDK were in collaboration and contribute in NDA. Keeping these things in mind, we came up with this distribution.

3.1.30 Tripura

Political Parties	2nd Preferences
INC	CPM(25%) & IND(75%)
CPM	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preferences

No BJP in Tripura. This is a place where people elect based on the popularity. CPM and INC have a good fight here. People favouring CPM or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution.

3.1.31 Uttar Pradesh

Political Parties	2nd Preferences
INC	Proportionately between SP and BSP
BJP	Proportionately between INC and BSP
BSP	Proportionately between INC and SP
SP	INC(100%)

UP follows Caste-based politics. BJP is associated with upper castes. While, BSP focuses on Scheduled Castes. INC and SP have pact on OBC. Overall, Muslims will prefer not to vote for BJP. Considering all these things into account and the fact, that both SP and INC candidate wish that BJP is not in power, we came up with this prediction.

3.1.32 Uttarakhand

Political Parties	2nd Preferences
INC	BJP(25%) & IND(75%)
BJP	INC(20%) & IND(80%)
IND	Proportionate distribution according to first preference

In Uttarakhand, only BJP and INC are prominent and both likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are unlikely to vote for the counter one. Since, IND parties are not much influential, our last assumption might not be totally true. Thus, the distribution

3.1.33 West Bengal

Political Parties	2nd Preferences
INC	Proportionate between AITC and IND
BJP	Proportionate between CPM and IND
AITC	Proportionate between INC, BJP and IND
CPM	BJP(100%)

In West Bengal, AITC is quite famous and give equal fight to national parties. Now, AITC do not favour much to any one of BJP or INC, we came up with this distribution.

3.2 Negative Preferential Voting System

3.2.1 Andaman and Nicobar Islands

Political Parties	Negative Preferences
INC	BJP(90%) & IND(10%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Andaman Nicobar is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC will vote negatively for the counter one. Since, IND parties are not much influential, our last assumption becomes more strong. Thus, the distribution

3.2.2 Andhra Pradesh

Political Parties	Negative Preferences
INC	BJP+TDP(100%)
BJP+TDP	TRS(30%) & INC(60%) & IND(10%)
TRS	BJP+TDP(100%)
IND	Proportionately between INC, BJP+TDP and TRS

In 2014 elections for Andhra Pradesh, BJP and TDP were in collaboration. Thus, we considered them as one. This state was not much affected by Modi Wave with the local party TRS in picture. INC voters will not vote for TRS since TRS was formed earlier in alliance with INC. On following assumptions, we have this distribution.

3.2.3 Arunachal Pradesh

Political Parties	Negative Preferences
INC	BJP(90%) & IND(10%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Arunachal Pradesh is a state where people elect based on the popularity. A central positive sentiment favoured BJP and difference between INC and BJP candidate is very less in case INC is winning. Also, people favouring BJP or INC are likely to vote negative for the counter one. Since, IND parties are not much influential, our last assumption becomes more strong. Thus, the distribution.

3.2.4 Assam

Political Parties	Negative Preferences
INC	BJP(85%) & IND(15%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Assam is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes more strong. Thus, the distribution .

3.2.5 Bihar

Political Parties	Negative Preferences
INC+RJD	BJP(85%) & JD(U)(10%) & IND(5%)
JD(U)	INC+RJD(50%) & BJP(50%)
IND	Proportionately between (INC + RJD), BJP and JD(U)

In 2014 elections for Bihar, INC and RJD were in collaboration. Thus, we considered them as one. This state was very much affected by Modi Wave with the local leader Sushil Modi representing Modi community. So, people voting for INC or RJD are likely to vote for BJP. People voting for JD(U) can have two opinions, first JD(U) is against BJP this time and second JD(U) came in collaboration with BJP for state elections. Thus, chances of different views are possible. On following assumptions, we simulated this distribution.

3.2.6 Chandigarh

Political Parties	Negative Preferences
INC	BJP(80%) & IND(20%)
BJP	IND(80%) & IND(20%)
AAAP	BJP(70%) & INC(30%)
IND	Proportionately between INC and BJP

Chandigarh was quite affected by Modi Wave but Kejriwal picture also came in between. Keeping the counter parties preferences in mind, we came on this very conclusion.

3.2.7 Dadra and Nagar Haveli

Political Parties	Negative Preferences
INC	BJP(85%) & IND(15%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Dadra and Nagar Haveli is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.8 Daman and Diu

Political Parties	Negative Preferences
INC	BJP(85%) & IND(15%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Daman and Diu is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.9 Delhi

Political Parties	Negative Preferences
INC	BJP(85%) & AAP(10%) & IND(5%)
BJP	INC(65%) & AAP(25%) & IND(10%)
AAP	BJP(75%) & INC(20%) & IND(5%)
IND	Proportionately between INC, BJP and AAP

Delhi was quite affected by Modi Wave but Kejriwal picture also came in between. Both Kejriwal and Modi tried to diminish INC game here. And that's why, INC was never in race. Keeping the counter parties preferences in mind, we came on this very conclusion.

3.2.10 Goa

Political Parties	Negative Preferences
INC	BJP(85%) & IND(15%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

Goa is a state where both BJP and INC candidates were likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.11 Gujarat

Political Parties	Negative Preferences
INC	BJP(75%) & IND(25%)
BJP	INC(95%) & IND(5%)
IND	Proportionately between INC and BJP

Gujarat is Modi's place and there's no chance that Modi Wave will not work here. Even, people preferring INC or other parties might not vote negative for BJP. Accounting this in fact and the State Politics, we came up to this very conclusion.

3.2.12 Haryana

Political Parties	Negative Preferences
INC	Proportionately between IND and INLD
INC	BJP(50%) & INLD(45%) & IND+BSP+AAP(5%)
BJP	INC(90%) & IND+BSP+AAP(10%)
INLD	INC(80%) & BJP(10%) & IND+BSP+AAP(10%)

Haryana is very much into State Politics. Modi Wave was also prevalent there. Accounting INLD, the famous local party in picture, we came to this conclusion.

3.2.13 Himachal Pradesh

Political Parties	Negative Preferences
INC	BJP(80%) & IND(20%)
BJP	INC(75%) & IND(25%)
IND	Proportionately between INC and BJP

Studying Himachal's people predictions is tricky. If we see history, BJP and INC always come in alternate terms. This time, Modi Wave did help BJP. Keeping the no counter vote policy in mind, we came up with this prediction.

3.2.14 Jammu and Kashmir

Political Parties	Negative Preferences
INC	BJP(80%) & JKDPDP(15%) & IND(5%)
BJP	INC(90%) & JKDPDP(5%) & IND(5%)
JKDPDP	INC(55%) & BJP(5%) & IND(40%)
IND	Proportionately between INC, BJP and JKDPDP

In J&K, there was an internal pact between JKDPDP and BJP which was revealed later. Since, JKDPDP were related to INC earlier, we decided this distribution would be the best estimate.

3.2.15 Jharkhand

Political Parties	Negative Preferences
INC+JMM	BJP(80%) & JVM(10%) & IND(10%)
BJP	INC+JMM(80%) & JVM(10%) & IND(10%)
JVM	BJP(50%) & INC(50%)
IND	Proportionately between BJP, (INC+JMM) and JVM

Due to wide variety in types of people in Jharkhand, the vote structure differs a lot between Rural and Urban Areas. With local parties like JVM and JMM into picture, the simulation becomes quite complicated. Taking consideration into old and new pacts we came up with this very conclusion.

3.2.16 Karnataka

Political Parties	Negative Preferences
INC	BJP(90%) & JD(S)(5%) IND(5%)
BJP	INC(85%) & JD(S)(10%) & IND(5%)
JD(S)	BJP(85%) & INC(15%)
IND	Proportionately between INC, BJP and JD(S)

Modi Wave was quite prevalent in Karnataka since we saw completely different results as compared to State Assembly Elections which happened just few months back in 2013. JD(S) have links with both BJP and INC, currently favoring INC and they will vote negative to both of them. Thus the distribution.

3.2.17 Kerala

Political Parties	Negative Preferences
INC	BJP(30%) & CPM(65%) & IND(5%)
BJP	INC(85%) & CPM(10%) & IND(5%)
CPM	INC(90%) & BJP(5%) & IND(5%)
IND	Proportionately between CPM, BJP and INC

Local Parties are quite prominent here as INC and BJP did not manage to capture any good results. Since, CPM is in coalition with BJP, we thought this prediction as best one. Thus, the distribution.

3.2.18 Lakshadweep

Political Parties	Negative Preferences
INC	NCP(90%) & IND(10%)
NCP	INC(85%) & IND(15%)
IND	Proportionately between INC and NCP

No BJP in Lakshadweep. This is a place where people elect based on the popularity. NCP and INC have a good fight here. People favouring NCP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.19 Madhya Pradesh

Political Parties	Negative Preferences
INC	BJP(75%) & IND(25%)
BJP	INC(95%) & IND(5%)
IND	Proportionately between INC and BJP

In MP, only BJP and INC are prominent and both likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.20 Maharashtra

Political Parties	Negative Preferences
INC+NCP	IND(10%) & BJP+SHS(90%)
BJP+SHS	IND(10%) & INC+NCP(90%)
IND	Proportionately between BJP+SHS and INC+NCP

Here, INC and NCP plus BJP and SHS fought in coalitions. As like in above cases, BJP sentiments helped BJP+SHS and taking account of same counter part there, we assumed this distribution.

3.2.21 Manipur

Political Parties	Negative Preferences
INC	NPF+CPI(90%) & IND(10%)
NPF+CPI	INC(85%) & IND(15%)
IND	Proportionately between INC and NPF+CPI

No BJP in Manipur. This is a place where people elect based on the popularity. NPI + CPI and INC have a good fight here. People favouring NPI and CPI or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.22 Meghalaya

Political Parties	Negative Preferences
INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If negative preference is to be taken into account, this is the only option.

3.2.23 Mizoram

Political Parties	Negative Preferences
INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If negative preference is to be taken into account, this is the only option.

3.2.24 Nagaland

INC	IND(100%)
IND	INC(100%)

Single Party Dominant State. If negative preference is to be taken into account, this is the only option.

3.2.25 Puducherry

Political Parties	Negative Preferences
INC	ADMK(90%) & IND(10%)
ADMK	AINRC(100%)
AINRC	INC(100%)
IND	Proportionately between INC, ADMK and AINRC

Two local parties rule in Puducherry. INC have good pact with ADMK as ADMK was formed from INC. Taking all this in account, we came up to this very conclusion.

3.2.26 Punjab

Political Parties	Negative Preferences
INC	BJP+SAD(90%) & AAP(5%) & IND(5%)
BJP+SAD	INC(85%) & AAP(15%)
AAP	BJP+SAD(65%) & INC(35%)
IND	Proportionately between INC, BJP+SAD and AAP

Here, BJP and SAD fought in collaboration. Thus, considering them as one. Both INC and BJP voters will prefer to vote for counter. and AAP also in picture, voters from each community might vote for them too. Now, AAP has a collaboration with INC since BJP was there in large scale, we assumed this distribution will be the best.

3.2.27 Rajasthan

Political Parties	Negative Preferences
INC	BJP(75%) & IND(25%)
BJP	INC(95%) & IND(5%)
IND	Proportionately between INC and BJP

If we see history of Rajasthan, BJP and INC always come in alternate terms. This time, Modi Wave do helped BJP. Keeping the counter vote policy in mind, We came up with this prediction.

3.2.28 Sikkim

Political Parties	Negative Preferences
SKM	IND(100%)
IND	SKM(100%)

Single Party Dominant State. If negative preference is to be taken into account, this is the only option.

3.2.29 Tamil Nadu

Political Parties	2nd Preferences
INC	ADMK(70%) & DMK(25%) & IND(5%)
DMK	ADMK(70%) & DMK(25%) & IND(5%)
ADMK	INC(25%) & DMK(75%)
DMDK	INC(25%) & DMK(75%)
IND	Proportionately between INC, DMK, ADMK, DMDK and IND

Tamil Nadu don't have BJP in such. Three major state parties DMK, ADMK and DMDK are quite popular throughout the state. DMK have connections with INC while ADMK and DMDK were in collaboration and contribute in NDA. Keeping these things in mind, we came up with this distribution.

3.2.30 Tripura

Political Parties	Negative Preferences
INC	CPM(90%) & IND(10%)
CPM	INC(85%) & IND(15%)
IND	Proportionately between INC and CPM

No BJP in Tripura. This is a place where people elect based on the popularity. CPM and INC have a good fight here. People favouring CPM or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution.

3.2.31 Uttar Pradesh

Political Parties	Negative Preferences
INC	BJP(80%) & SP(5%) & BSP(5%) & IND(10%)
BJP	SP(70%) & INC(25%) & SP(5%)
BSP	BJP(60%) & INC(10%) & SP(30%)
SP	BJP(50%) & BSP(40%) & INC(5%) & IND(5%)
IND	Proportionately between INC, BJP, BSP, SP

UP follows Caste-based politics. BJP is associated with upper castes. While, BSP focuses on Scheduled Castes. INC and SP have pact on OBC. Overall, Muslims will prefer not to vote for BJP. Considering all these things into account and the fact, that both SP and INC candidate wish that BJP is not in power, we came up with this prediction.

3.2.32 Uttrakhand

Political Parties	Negative Preferences
INC	BJP(90%) & IND(10%)
BJP	INC(85%) & IND(15%)
IND	Proportionately between INC and BJP

In Uttrakhand, only BJP and INC are prominent and both likely to win. A central positive sentiment favoured BJP. Also, people favouring BJP or INC are likely to vote for the counter one. Since, IND parties are not much influential, our last assumption becomes strong. Thus, the distribution .

3.2.33 West Bengal

Political Parties	Negative Preferences
INC	BJP(80%) & CPM(15%) & IND(5%)
BJP	INC(85%) & AITC(10%) & IND(5%)
CPM	INC(90%) & AITC(10%)
AITC	BJP(85%) & CPM(15%)
IND	Proportionately between INC, BJP, CPM, AITC

In West Bengal, AITC is quite famous and give equal fight to national parties. Now, AITC do not favour much to any one of BJP or INC, we came up with this distribution.

4 Data and Method

We took the data for the last general elections from Election Commission of India(ECI) website^[2]. We did the following manipulations on data to get the desired format:

1. In each constituency, apart from major political parties all other candidates and their votes were merged under one category(IND).
2. We used Python script to count the number of votes of different political parties in each constituency (and we did this for all the states).
3. We used Python script to generate 2nd and negative preferences for all states according to the hypothesis.
4. We calculated the final vote sum for all cases and calculated the winning political party in each case.

5 US Electoral System

In third part of our project, we replaced Indian Electoral system by US electoral system. In this part, we addressed the problem of large number of political parties by assigning all the constituencies of a state to the party which wins in most of the constituencies.

The criteria for a state to have US System is if the total number of distinct political parties winning in constituencies of that state is greater than a certain threshold value. We changed the value of the threshold from 1 to 8 (because in all the states the number of distinct winning parties were always less than 8) and observed the changes in number of seats of the party securing majority in Lok Sabha and the number of total distinct parties that make to Lok Sabha.

6 Results

Figure 1: GE 2014 Results

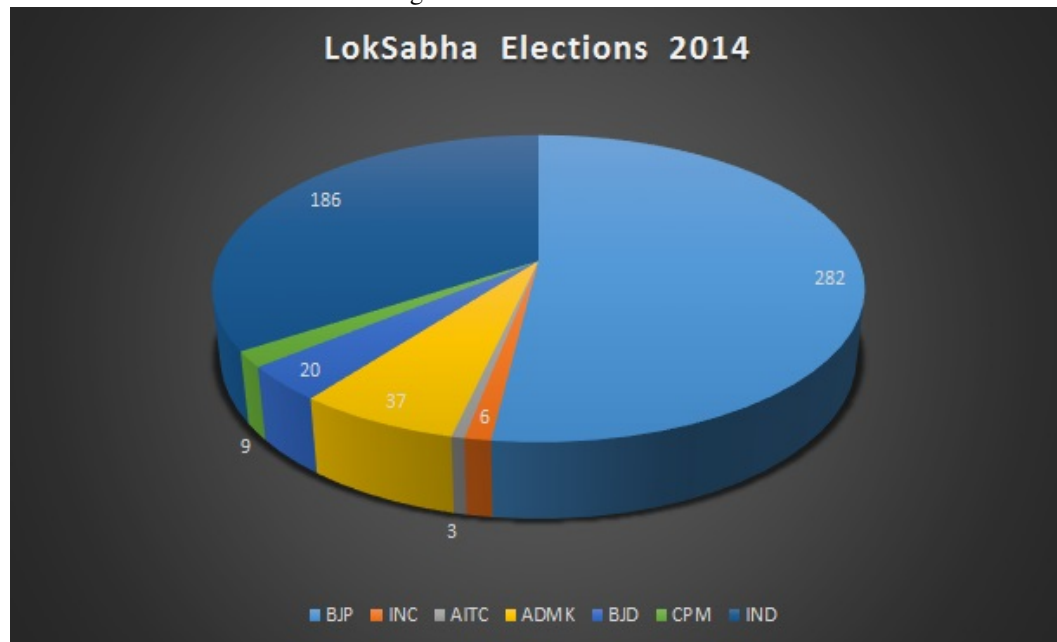


Figure 2: Preferential Voting System

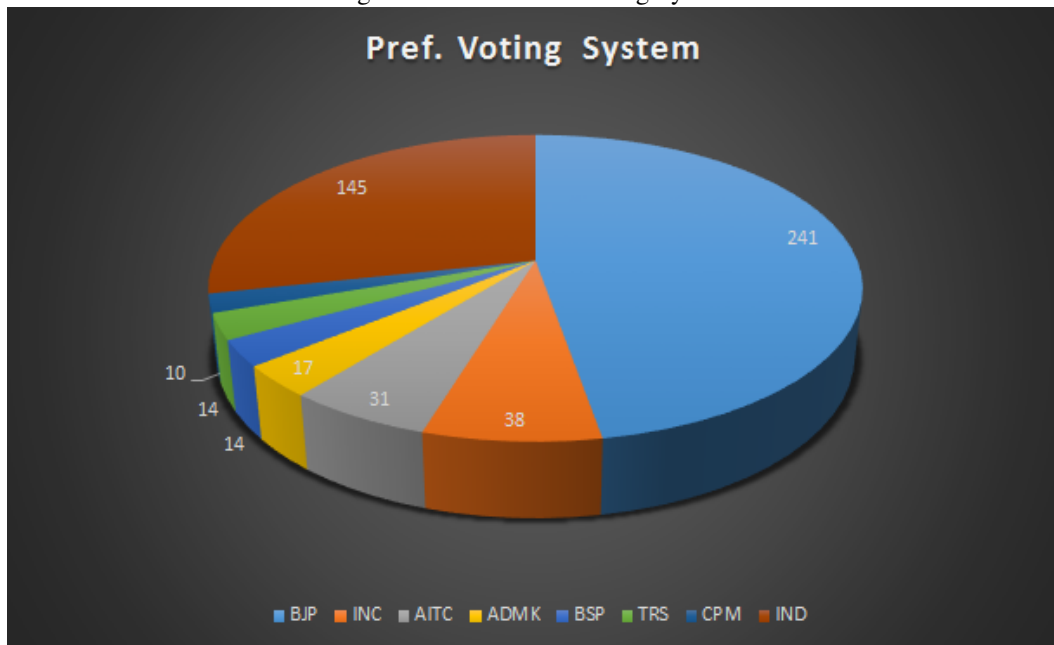
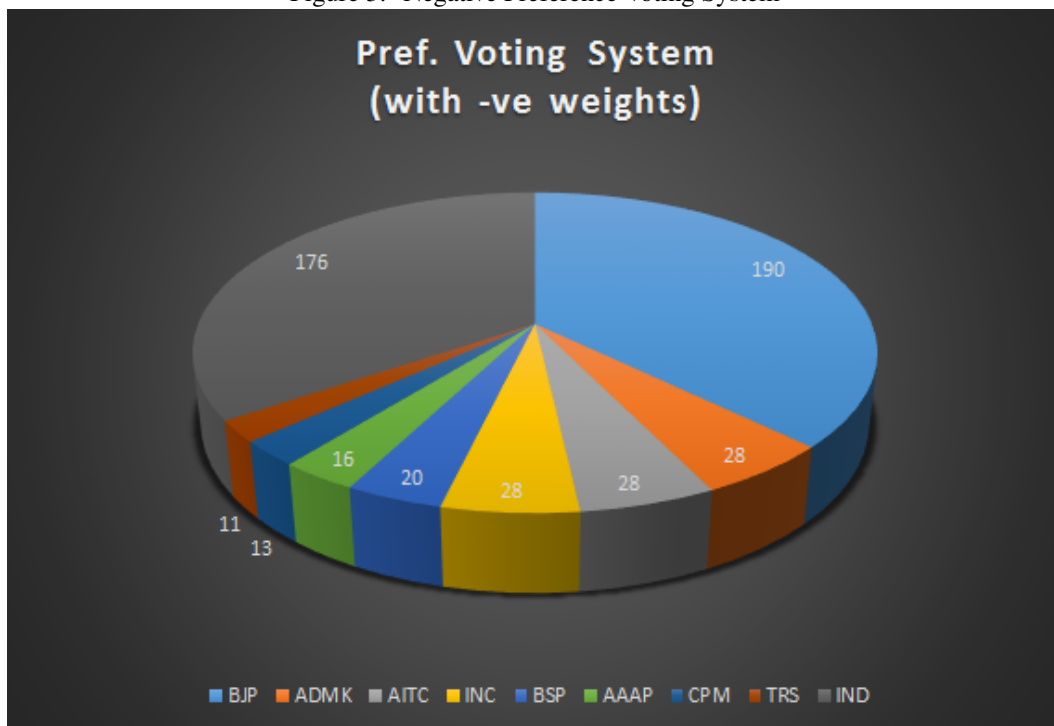


Figure 3: Negative Preference Voting System



Preferential Voting actually helps to know more about the sentiments of people. Any hypothesis can never be close to the reality but, it gives a closer estimate. According to the hypothesis, Preferential Voting Systems does not support any ongoing Wave and is more practical. As, we can see the BJP seats decreasing to 241 and 190 from 282 in these cases.

Figure 4: Total seats of winning party vs Threshold

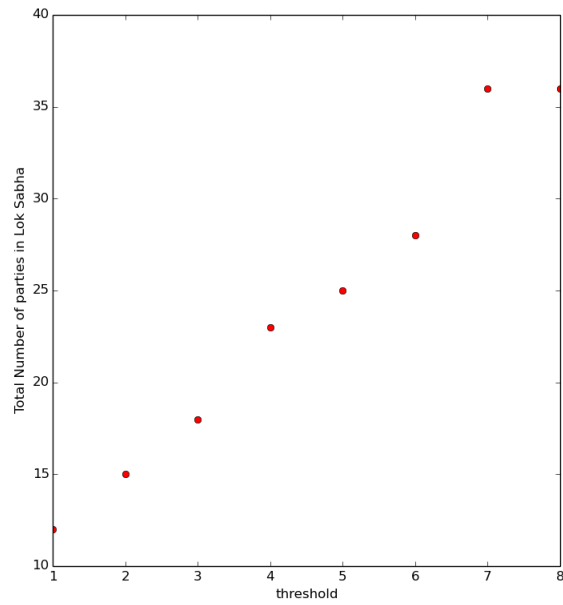
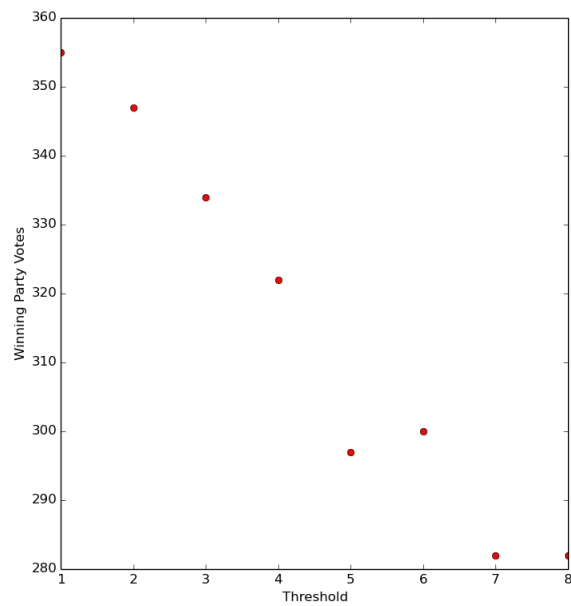
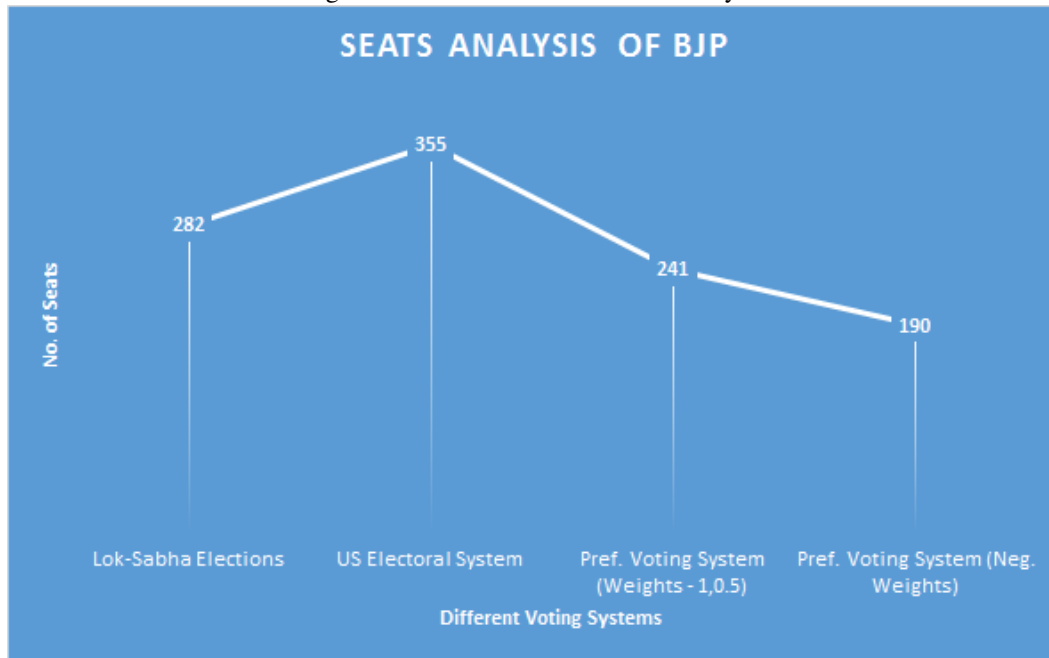


Figure 5: Total distinct political parties vs Threshold



The US model actually favours any ongoing wave in country even if we take various threshold levels. With the constraints in Indian constituency, this model is near to impossible to implement in Indian systems

Figure 6: BJP seats in Lok Sabha Analysis



Here's the representation of the number of seats won by BJP in different cases.

7 References

- [1] Gill, M. S., 1997. The Electoral System in India.
- [2] Statistical Report- General Elections 2014, Election Commission of India
- [3] Wikipedia - Indian General Election 2014